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- 17. A control device as recited in claim 1 wherein said actuator outputs a vibration or a pulse tactile sensation on said direction pad.
- **18**. A control device as recited in claim 1 wherein said computer displays a graphical environment which with said 5 user interacts using said control device.
- 19. A control device as recited in claim 18 wherein said control device is a game controller and said computer displays a game.
- 20. A control device as recited in claim 1 further comprising a sensor for detecting motion or position of said direction pad approximately perpendicularly to a top surface of said direction pad, wherein an input signal based on said detected motion or position is sent to said computer.
- 21. A control device as recited in claim 9 wherein said linear force can be output on said direction pad to provide a tactile sensation when said direction pad is held at a limit to its travel.
- 22. A tactile feedback control device for inputting control signals to a host computer and for outputting forces to a user of the control device, the control device comprising:
 - a housing;
 - a direction pad coupled to said housing, said direction pad capable of being contacted by said user in at least two different locations to provide two different directional signals to said host computer, each directional signal 25 corresponding to one of said locations on said direction pad; and
 - a computer-controlled actuator coupled to said direction pad, said actuator outputting a linear force directly on said direction pad, wherein said linear force is provided along a z-axis approximately perpendicularly to a plane of a top surface of said direction pad.

 38. A controlled actuator coupled to said direction and device is of a user.

 39. A controlled actuator coupled to said direction and device is of a user.
- 23. A control device as recited in claim 22 further comprising a local microprocessor separate from said host computer, said microprocessor receiving force information 35 from said host computer and providing control signals based on said force information to control said actuator.
- 24. A control device as recited in claim 22 further comprising a sensor that detects when said locations of said direction pad have been contacted by said user.
- 25. A control device as recited in claim 24 wherein said sensor includes a plurality of contact switches.
- **26.** A control device as recited in claim **22** wherein said direction pad is capable of being contacted by said user in four different locations, each location providing a different 45 directional signal to said host computer.
- 27. A control device as recited in claim 22 wherein said actuator outputs a vibration or pulse tactile sensation on said direction pad.
- 28. A control device as recited in claim 22 further comprising a sensor for detecting motion or position of said direction pad approximately perpendicularly to a top surface of said direction pad, wherein an input signal based on said detected motion or position is sent to said host computer.
- 29. A control device as recited in claim 22 wherein said 55 computer displays a graphical environment which with said user interacts using said control device, and wherein said direction pad is moved to different positions on an axis approximately perpendicular to a top surface of said direction pad, said different positions based on a desired 3-D 60 elevation of an object or area displayed in said graphical environment.
- **30.** A control device as recited in claim **22** wherein said direction pad is caused to move to a lower position when a user-controlled graphical object is moved over a selectable 65 graphical object displayed in a graphical environment implemented by said host computer.

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- 31. A control device as recited in claim 22 wherein said host computer implements and displays a graphical environment, and wherein said direction pad controls a cursor in said graphical environment.
- 32. A control device as recited in claim 31 wherein a menu is displayed in said graphical environment, wherein when said cursor is moved between menu elements in said menu, a pulse is output on said direction pad, said pulse causing said direction pad to move along said z-axis.
- 33. A control device as recited in claim 31 wherein an icon is displayed in said graphical environment, wherein when said cursor is moved over said icon, a pulse is output on said direction pad, said pulse causing said direction pad to move along said z-axis.
- 34. A control device as recited in claim 31 wherein a web page is displayed in said graphical environment and a hyperlink is displayed on said web page, wherein when said cursor is moved over said hyperlink, a pulse is output on said direction pad, said pulse causing said direction pad to move along said z-axis.
- **35**. A control device as recited in claim **22** wherein said device is a gamepad controller.
- **36.** A control device as recited in claim **22** wherein said device is a mouse.
- **37**. A control device as recited in claim **22** wherein said device is a remote control device for controlling functions of an electronic device or appliance.
- 38. A control device as recited in claim 22 wherein said device is a handheld device operated with at least one hand of a user.
- **39.** A control device as recited in claim **22** wherein said force on said direction pad causes said direction pad to vibrate along said z-axis with respect to said housing.
- **40**. A method for providing haptic feedback to a direction pad of an interface device, said interface device coupled to a host processor implementing a graphical environment, the method comprising:

providing a housing;

- providing at least one sensor operative to sense manipulation of a direction pad provided on said housing by a user, said direction pad including a plurality of locations, wherein said manipulation includes the pressing of at least one of said locations on said direction pad by said user, wherein said at least one sensor provides a different sensor signal for each of said pressed locations; and
- providing an actuator coupled to said housing, said actuator receiving control signals derived from force information from said host processor, wherein said force information causes said actuator to output a force on said direction pad to cause said direction pad to move with respect to said housing, said force being correlated with an interaction occurring in said graphical environment between a user-controlled graphical object or entity and a different graphical object.
- 41. A method as recited in claim 40 wherein said force output on said direction pad is a linear force approximately perpendicular to a top surface of said direction pad.
- **42**. A method as recited in claim **41** wherein said direction pad includes four locations, each location spaced about a center point ninety degrees from adjacent locations.
- **43**. A method as recited in claim **42** wherein each of said locations is coupled to an associated actuator for providing a force on said associated location.
- 44. A method as recited in claim 41 wherein said direction pad is moveable along an axis approximately perpendicular to a top surface of said direction pad, wherein said move-